H127 The Impact of Postmortem Microbiota on *Lucilia Sericata* Development

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Learning Overview: After attending this presentation, attendees will have a better appreciation of the impact of selected postmortem bacteria on *Lucilia sericata* development.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing information on the influence of postmortem microbiota on necrophageous insects, which can be of use when evaluating the minimum postmortem interval.

When a putrefied corpse is discovered, several issues arise for the investigators, including providing an estimation of the postmortem interval. Different methods are used to determine an answer to this question, such as the study of the necrophageous insects when they are present. Even though the bacterial communities are abundant on a decomposing body, interactions between insects and the postmortem microbiota are still little known and underestimated. The purpose of this study is to clarify the influence of bacteria that are present during decomposition on the development of *Lucilia sericata* (Meigen) (Diptera: Calliphoridae), a forensically relevant blow fly species.

Several *L. sericata* larvae were sampled on decomposing human corpses and their Excretion/Secretion (ES) fluids were extracted. The bacteria present in the ES fluids were identified using cultural methods and mass spectrometry. Among them, two strains were chosen for confrontation during larval development: *Proteus mirabilis* and *Providencia alcalifaciens*. *L. sericata* eggs were sterilized using successive baths of sodium hypochlorite and 70% ethanol solution. After hatching at 25°C, the larvae were transferred on artificial diets in three different conditions: two groups mono-inoculated with either *P. mirabilis* or *P. alcalifaciens* as well as a control. The diet (Columbia yeast agar) was selected to be as favorable for insects as for bacterial proliferation. Larval development was observed from first instar to puparial stage, which was allowed using sterilized sand around the plates. All insects were followed at 25°C until adult emergence. More than 750 larvae were tracked for every studied condition (the experiments are still in progress). For each replicate of every tested condition, ten larvae were sampled every eight hours during five consecutive days between first instar and post-feeding stage. Larval development and survival were compared between each bacteria and the control. The preliminary results are in favor of differences concerning the early phases of the larval growth, but more replicates are still needed.

During decomposition, bacteria such as *P. mirabilis* and *P. alcalifaciens* (both naturally present in the human intestinal microbiota) are proliferating and interacting with the other present organisms. This study will allow a better understanding of the biotic and abiotic factors involved with decomposing human remains.

Taphonomy, Postmortem Microbiota, Forensic Entomology